

**\*ISG** Provider Lens™

# Mainframe Services & Solutions

Mainframe Operations

U.S. 2021

Quadrant  
Report



A research report  
comparing provider  
strengths, challenges  
and competitive  
differentiators

Customized report courtesy of:

**HCL**

April 2021

## About this Report

Information Services Group Inc. is solely responsible for the content of this report. Unless otherwise cited, all content, including illustrations, research, conclusions, assertions and positions contained in this report were developed by, and are the sole property of Information Services Group Inc.

The research and analysis presented in this report includes research from the ISG Provider Lens™ program, ongoing ISG Research programs, interviews with ISG advisors, briefings with services providers, and analysis of publicly available market information from multiple sources. The data collected for this report represents information that ISG believes to be current as of February 2021, for providers who actively participated as well as for providers who did not. ISG recognizes that many mergers and acquisitions have taken place since that time, but those changes are not reflected in this report.

All revenue references are in U.S. dollars (\$US) unless noted.

The lead author for this report is Pedro L. Bicudo Maschio. The editors Ipshita Sengupta and Grant Gross. The research analyst is Srinivasan PN and the data analyst is Anirban Choudhury. The quality and consistency advisors are John Schick, Tony Mataya, and Shriram Natarajan.



ISG Provider Lens™ delivers leading-edge and actionable research studies, reports and consulting services focused on technology and service providers' strengths and weaknesses and how they are positioned relative to their peers in the market. These reports provide influential insights accessed by our large pool of advisors who are actively advising outsourcing deals as well as large numbers of ISG enterprise clients who are potential outsourcers.

For more information about our studies, please email [ISGLens@isg-one.com](mailto:ISGLens@isg-one.com), call +49 (0) 561-50697537, or visit ISG Provider Lens™ under [ISG Provider Lens™](#).



ISG Research™ provides subscription research, advisory consulting and executive event services focused on market trends and disruptive technologies driving change in business computing. ISG Research™ delivers guidance that helps businesses accelerate growth and create more value.

For more information about ISG Research™ subscriptions, please email [contact@isg-one.com](mailto:contact@isg-one.com), call +49 (0) 561-50697537 or visit [research.isg-one.com](http://research.isg-one.com).



- 1** Executive Summary
- 5** Introduction
- 17** Mainframe Operations
- 21** Methodology

© 2021 Information Services Group, Inc. All Rights Reserved. Reproduction of this publication in any form without prior permission is strictly prohibited. Information contained in this report is based on the best available and reliable resources. Opinions expressed in this report reflect ISG's judgment at the time of this report and are subject to change without notice. ISG has no liability for omissions, errors or completeness of information in this report. ISG Research™ and ISG Provider Lens™ are trademarks of Information Services Group, Inc.



## EXECUTIVE SUMMARY

This is the first time ISG Provider Lens™ studies have included mainframe modernization. It is a response to buyers' requests for advice on what to do with their mainframes. This research qualified 47 vendors and service providers in five quadrants. According to these companies, the mainframe modernization market has been accelerating in the last two years, driven by the need to increase business agility.

In the preparation phase for this study, we found a lot of articles speculating about what a CIO should do with the mainframes. Common questions include: How should they include the mainframe in their cloud strategies? As COBOL programmers are getting close to retirement, what are the risks of facing a skill shortage?

In this report, clients will find five alternatives represented in each quadrant. Mainframe modernization considers the choice of introducing agility into legacy mainframe applications. Mainframe transformation deals with options to move all applications off the mainframe. Mainframe-as-a-Service (MFaaS) supplements the modernization path, providing a pay-as-you-go (PAYG) business model. Those that do not plan to modernize consider outsourcing mainframe operations. These four quadrants help clients find the right service provider that can deliver to their needs. The fifth quadrant provides clients with modernization tool options for those that prefer to run modernization projects themselves.

A CIO should reflect on the real issue before figuring out if there is a need to modernize or change the mainframe. Setting a short timeframe (12 to 18 months) is imperative to

guide reasoning in this case. More than 24 months would lead to a bias in favor of long application modernizations, which are not recommended. Decision-makers will find more details about the key topics that follow.

**Mainframe legacy applications are dead:** IBM Z platform has a future running z/OS, Linux, and other operating systems. However, for enterprise clients, the future of the hardware is irrelevant. Business applications are what is important. COBOL, Assembler, PL1, Natural, and other legacy programming languages are procedural and outdated. Modern applications are built on object-oriented programming languages such as Java, .NET, and C#. Investing in modernizing the toolset for agility will bring more significant benefits in the long run.

**The top 100 have mainframes:** According to IBM, "92 of the world's top 100 banks, 23 of the 25 top U.S. retailers, and nine out of 10 of the world's largest insurance companies run System z mainframe. Nine out of the top 10 global life and health insurance providers use a System z mainframe. And 71 percent of global Fortune 500 companies are System z clients." These facts do not suggest that enterprises should be writing new COBOL applications.

**Optimizing the mainframe:** Clients have several tools to optimize their mainframes. Providers of MFaaS and mainframe modernization can bring 10 to 25 percent cost savings while transitioning services. They check configurations, software licenses, and dead code that may waste mainframe resources. Also, competitive bidding processes have historically helped reduce cost.

**Modernizing the mainframe:** The most frequently used method is encapsulating batch and business functions into microservices that can run directly in the cloud. Application programming interfaces (APIs) that expose business function or mainframe data to other applications are always cited as part of the modernization. When the intention is to decommission the mainframe, modernization results in moving all applications to the cloud (or replatforming). Two methods that are prevalent include emulators, which enable COBOL to run in the cloud, and COBOL code compiled to Java or .NET to run in the cloud.

**Re-engineering applications off the mainframe:** A method that is gaining momentum is automated application re-engineering. Tools are fast, reliable, and produce quality code. Recent advances in methods and technology include artificial intelligence (AI), programming frameworks, code quality inspection, and automated testing. In the past, these tools required expensive on-premises processing power; however, at present, these tools run in the cloud with an increased processing capacity at much lower costs as well as much lower risks. Re-engineering of applications is viable and cost-effective.

**Re-engineering:** Most case studies cover less than 5 million lines of code converted to Java. Other languages include .NET and C#. Re-engineering is completed in a few months. The largest case study was 20 million lines of code converted in 20 months. Automated re-engineering can convert 2 million lines of code in one hour. Most of the project duration is spent on testing and quality assurance.

**Converting COBOL to Java:** Direct conversion does not include re-engineering. Data and logic stay the same, and the new code behaves the same as the old code. These conversion tools handle COBOL and many legacy languages and write modern code where Java is the most popular language. Converting code is much faster than re-engineering but also involves many testing cycles. These automation tools can convert 28 million lines of code in one hour.

**Emulators:** Replatforming and moving applications to x86 servers from mainframes have long been a possibility. The recent development observed is cloud virtual machines have increased the capacity of each x86 server, and the virtual servers can scale horizontally (many server images install within minutes). Cloud capacity and improved emulation technologies enable workloads of more than 100,000 MIPS to run in the cloud.

**The database and storage myth:** Mainframes hold vast amounts of data, which suggests that mainframe databases cannot go into the cloud. However, none of the participants in this survey mention issues associated with database size or storage complexity. Cloud data lakes are popular alternatives for storage, flat files, and virtual tape backup. Service providers are unanimous in converting legacy databases to any relational database with automated tools. The most popular choice to replace IBM DB2 is the open-source PostgreSQL.

**The performance myth:** Mainframes scale vertically, by adding more disk, CPU, and memory. The cloud scales horizontally, adding more servers of the same capacity. Any of the methods for replatforming mainframes to the cloud offer the same performance, or better, because of horizontal scaling.

**The skill shortage myth:** Service providers have demonstrated they can attract and train young talents to work on mainframes. The assessed providers employ more than 170,000 mainframe programming experts, including 60,000 COBOL programmers. In operations, more than 53,000 experts keep mainframes running. They have five years of experience on average. Only 6 percent of the mainframe operators have more than 14 years of experience. However, these numbers need to be put in perspective. COBOL skills are just as rare as SAP. A LinkedIn search returns more than 350,000 people with COBOL skills, 288,000 experts in ABAP (SAP programing language), 3 million C# programmers, and an astonishing 10 million people with Java skills.

**Offshoring is a solution for skills shortage:** All participating service providers have global operations and COBOL delivery capacity in India. The assumption that a COBOL career is not interesting to youth generations is valid in the U.S.; however, global companies have found ways to attract and retain talents to work on mainframes and COBOL.

**Knowledge versus innovation dilemma:** Knowledge retention can be a challenge for clients that migrate from COBOL to Java because newly hired programmers do not understand the business and the company may not have a career path to offer to experienced COBOL programmers. A few solutions that compile COBOL to Java enable the co-existence of both programmers for a smooth transition, enabling for knowledge transfer.

Java is by far the preferred destination language when moving off the mainframe. Other languages include .NET, C#, Python, and Powershell (the last two for scripting batch

jobs.). Code re-engineering and code conversion tools provide automation to replace COBOL with Java. It performs well on any cloud and any relational database. Application development tools can handle both languages, providing a smooth transition for application development shops.

**Estimating project cost:** Vendor and providers usually mention lines of code (LOC) as the base for cost estimation (76 percent of the respondents). However, complexity, tools, and size have an additional impact on pricing. Some statistics include:

- Modernization and code refactoring cost: US\$0.25 to US\$2.30 per LOC; project duration: 2 to 36 months; and project cost: US\$100,000 to US\$25 million.
- Transformation and code conversion cost: US\$0.50 to US\$8.00 per LOC; project duration: 6 to 60 months; and project cost: US\$100,000 to US\$50 million.

**Estimating project viability:** Mainframe MIPS measures hardware capacity; it is not used for project estimations. However, it provides the first cost estimate for the cloud. A rough estimation is one x86 core in the cloud can replace 50 to 100 MIPS mainframe.

- Top 100 mainframe clients manage more than 50,000 MIPS, with few of them operating more than 200,000 MIPS.
- Very large MIPS client manages 10,000 to 50,000 MIPS.
- Large clients manage 5,000 to 10,000 MIPS.
- Mid-sized clients manage 2,000 to 5,000 MIPS.

- Small clients manage less than 2,000 MIPS.
- Top mainframe outsourcing providers manage more than 300,000 MIPS each, up to millions of MIPS.
- The average outsourced mainframe has 4500 MIPS per client.
- The U.S. concentrates 60 percent of global mainframe MIPS.

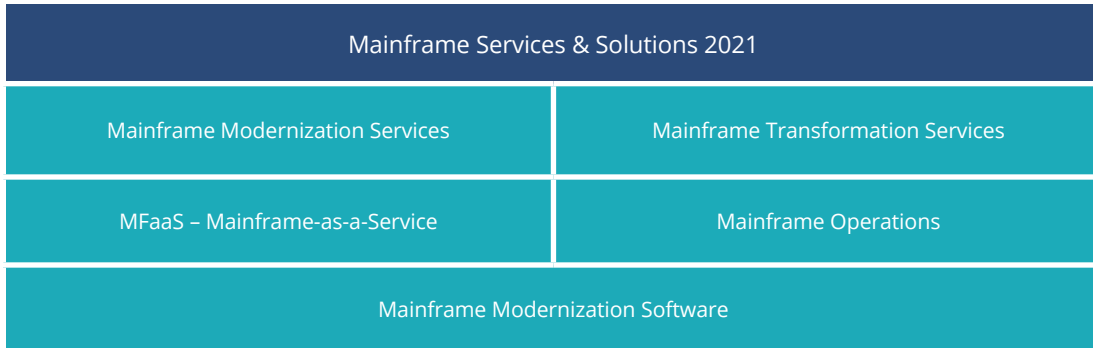
Clients running less than 5,000 MIPS should consider migrating their mainframes to the cloud. Any of the migration options are viable and cost-effective, providing short-term ROI. Clients hosting 10,000 MIPS and more can consider MFaaS as the first move for cost saving while assessing the modernization and transformation options. Top 100 mainframe clients run mainframe farms, not single monoliths. Outsourcing is a good option to reduce cost, while offshoring eliminates the skill shortage risk. Simultaneously, top mainframe clients can consider clustering their mainframe systems around similar business functions to study each cluster separately.

**Financing mainframe modernization is a challenge:** Many companies consider mainframe modernization a low return investment. A CIO of a large bank with more than 100,000 MIPS responded to our questions saying, “My mainframe is running the bank’s support functions, it is certainly not a problem, and I am not going to invest in it, not even to turn it off.” Vendors of modernization tools responded that, in most cases, the CIO sees the value but considers that the risk is an impediment. Vendors and service providers are working on making the projects faster, secure, and cost-effective to enable mainframe modernizations.

**Consider self-financing the modernization:** Some providers of application management and support services (AMS) propose deals that include mainframe modernization in the AMS goals. As a result, clients take the maintenance budget they already have and use it to move applications to low-cost platforms and code that is easier to maintain. Their three-year deal becomes a transformation program.

# Introduction

Simplified Illustration



Source: ISG 2021

## Definition

Mainframes have evolved and scaled to handle high transaction per second (TPS) requirements. These machines consolidate many high-performing CPUs (cores) into a single hardware platform. Their architecture distributes tasks to cores that run in parallel, sharing the internal bus, memory and I/O, thereby providing superior performance. Because of its more than 40 years history, many mainframes today host legacy programming language applications written with COBOL, RPG, Fortran, PL/1, Natural and others.

To comply with digital transformation business requirements, clients can modernize their mainframe applications and introduce agile methods as well as automate continuous integration tools. Two alternatives exist in the market, which include modernization and transformation. Modernization updates legacy code without changing the programming language and introduces automation,



## Definition (cont.)

DevOps and modern Agile practices. Mainframe transformation converts legacy code into modern languages to run on modern platforms, including private and public clouds.

To align with PAYG approaches, service providers have been offering MFaaS, which includes all hardware, software licensing and operations under a pay-per-MIPS arrangement. MFaaS is provided in a shared environment. Clients that need PAYG but prefer not to share resources may opt for managed mainframe operations, which enable custom combinations of hardware and licensing ownership.

This study focuses on understanding client objectives and assessing provider capabilities to deliver mainframe services, including modernization, transformation and supporting toolset.

The ISG Provider Lens™ study offers IT decision-makers the following:

- Transparency on providers' relevant strengths and weaknesses
- A differentiated positioning of providers by segments
- A perspective on different markets

This study focuses on the U.S. mainframe market.

ISG studies serve as an important decision-making basis for positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients use information from these reports to evaluate their current vendor relationships and potential new engagements.

## Definition (cont.)

### Scope of the Report

This study considers four mainframe markets: modernization, transformation, as-a-service and operations. To enable clients to select the tools available for modernization and transformation, this study includes a mainframe modernization software quadrant. This ISG Provider Lens™ quadrant study introduces five quadrants on mainframe services and solutions.

**Mainframe Modernization Services:** This quadrant focuses on service providers that offer legacy application modernization, introducing code repositories such as GitHub or similar options, DevOps integration and testing automation over original programming languages, such as COBOL, adding optimization to enable agility. After the modernization is complete, clients can embrace agile methodologies in the development and maintenance of applications running on mainframe systems.

**Mainframe Transformation Services:** This quadrant assesses application development and maintenance service providers that have evolved their application modernization methodologies to refactor, replatform or rewrite legacy programming language applications written with COBOL, RPG, Fortran, PL/1, Natural and others, enabling the same logic and business rules to run on any platform, including the public cloud.

**MFaaS – Mainframe-as-a-Service:** This quadrant assesses infrastructure service providers that offer shared IBM Z mainframes under a pay-per-use contract model. Services include facilities, hardware, connectivity, mainframe network management, licensing, operating system and subsystems, tools, and other services.

**Mainframe Operations:** This quadrant assesses traditional outsourcing providers that have long been offering mainframe services. Typical participants employ experienced practitioners to cover legacy mainframe technologies as well as the most recent mainframe releases. Services can be delivered on any hosting facility (client- or provider-owned).

## Provider Classifications

The provider position reflects the suitability of IT providers for a defined market segment (quadrant). Without further additions, the position always applies to all company sizes classes and industries. In case the IT service requirements from enterprise customers differ and the spectrum of IT providers operating in the local market is sufficiently wide, a further differentiation of the IT providers by performance is made according to the target group for products and services. In doing so, ISG either considers the industry requirements or the number of employees, as well as the corporate structures of customers and positions IT providers according to their focus area. As a result, ISG differentiates them, if necessary, into two client target groups that are defined as follows:

- **Mid Market:** Companies with 100 to 4,999 employees or revenues between US\$20 million and US\$999 million with central headquarters in the respective country, usually privately owned.
- **Large Accounts:** Multinational companies with more than 5,000 employees or revenue above US\$1 billion, with activities worldwide and globally distributed decision-making structures.

## Provider Classifications

The ISG Provider Lens™ quadrants are created using an evaluation matrix containing four segments (Leader, Product & Market Challenger and Contender), and the providers are positioned accordingly.

### Leader

The Leaders among the vendors/providers have a highly attractive product and service offering and a very strong market and competitive position; they fulfill all requirements for successful market cultivation. They can be regarded as opinion leaders, providing strategic impulses to the market. They also ensure innovative strength and stability.

### Product Challenger

The Product Challengers offer a product and service portfolio that provides an above-average coverage of corporate requirements, but are not able to provide the same resources and strengths as the Leaders regarding the individual market cultivation categories. Often, this is due to the respective vendor's size or weak footprint within the respective target segment.

### Market Challenger

Market Challengers are also very competitive, but there is still significant portfolio potential and they clearly fall behind the Leaders. Often, the Market Challengers are established vendors that are somewhat slow to address new trends due to their size and company structure, and therefore have some potential to optimize their portfolio and increase their attractiveness.

### Contender

Contenders still lack mature products and services or sufficient depth and breadth in their offering, but also show some strengths and improvement potential in their market cultivation efforts. These vendors are often generalists or niche players.

## Provider Classifications (cont.)

Each ISG Provider Lens™ quadrant may include a service provider(s) which ISG believes has strong potential to move into the Leader quadrant. This type of provider can be classified as a Rising Star. Number of providers in each quadrant: ISG rates and positions the most relevant providers according to the scope of the report for each quadrant and limits the maximum of providers per quadrant to 25 (exceptions are possible).

### Rising Star

Companies that receive the Rising Star award have a promising portfolio or the market experience to become a leader, including the required roadmap and adequate focus on key market trends and customer requirements. Rising Stars also have excellent management and understanding of the local market. This award is only given to vendors or service providers that have made significant progress toward their goals in the last 12 months and are expected to reach the Leader quadrant within the next 12 to 24 months due to their above-average impact and strength for innovation.

### Not In

The service provider or vendor was not included in this quadrant. There might be one or several reasons why this designation is applied: ISG could not obtain enough information to position the company; the company does not provide the relevant service or solution as defined for each quadrant of a study; or the company did not qualify due to market share, revenue, delivery capacity, number of customers or other metrics of scale to be directly compared with other providers in the quadrant. Omission from the quadrant does not imply that the service provider or vendor does not offer this service or solution, or confer any other meaning.

## Mainframe Services &amp; Solutions - Quadrant Provider Listing 1 of 4

	Mainframe Modernization Services	Mainframe Transformation Services	MFaaS – Mainframe-as-a-Service	Mainframe Operations	Mainframe Modernization Software
Accenture	● Not in	● Leader	● Not in	● Not in	● Not in
Advanced	● Not in	● Product Challenger	● Not in	● Not in	● Leader
Astadia	● Not in	● Product Challenger	● Not in	● Not in	● Not in
Asysco	● Not in	● Product Challenger	● Not in	● Not in	● Product Challenger
Atos	● Leader	● Leader	● Leader	● Leader	● Not in
Blu Age	● Not in	● Product Challenger	● Not in	● Not in	● Leader
BMC	● Contender	● Not in	● Not in	● Not in	● Not in
Capgemini	● Leader	● Leader	● Not in	● Leader	● Not in
Cognizant	● Contender	● Product Challenger	● Leader	● Product Challenger	● Not in
CPT Global	● Contender	● Not in	● Not in	● Not in	● Not in
Deloitte	● Not in	● Product Challenger	● Not in	● Not in	● Not in
DXC	● Leader	● Product Challenger	● Product Challenger	● Product Challenger	● Not in

## Mainframe Services &amp; Solutions - Quadrant Provider Listing 2 of 4

	Mainframe Modernization Services	Mainframe Transformation Services	MFaaS – Mainframe-as-a-Service	Mainframe Operations	Mainframe Modernization Software
Ensono	● Leader	● Contender	● Leader	● Leader	● Not in
Fujitsu	● Not in	● Leader	● Not in	● Not in	● Not in
GFT	● Not in	● Product Challenger	● Not in	● Not in	● Not in
GigaSpaces	● Contender	● Not in	● Not in	● Not in	● Not in
Google	● Not in	● Not in	● Not in	● Not in	● Leader
GT Software	● Not in	● Not in	● Not in	● Not in	● Contender
HCL	● Product Challenger	● Leader	● Rising Star	● Leader	● Not in
Heirloom	● Not in	● Not in	● Not in	● Not in	● Rising Star
HostBridge	● Not in	● Not in	● Not in	● Not in	● Contender
IBM	● Leader	● Market Challenger	● Leader	● Leader	● Market Challenger
Infosys	● Leader	● Leader	● Not in	● Leader	● Not in
INNOVA	● Not in	● Contender	● Not in	● Not in	● Not in

## Mainframe Services &amp; Solutions - Quadrant Provider Listing 3 of 4

	Mainframe Modernization Services	Mainframe Transformation Services	MFaaS – Mainframe-as-a-Service	Mainframe Operations	Mainframe Modernization Software
Keyhole	● Not in	● Contender	● Not in	● Not in	● Not in
LzLabs	● Not in	● Not in	● Not in	● Not in	● Product Challenger
Maintec	● Not in	● Not in	● Not in	● Contender	● Not in
Micro Focus	● Not in	● Not in	● Not in	● Not in	● Market Challenger
Mindtree	● Product Challenger	● Leader	● Not in	● Product Challenger	● Not in
MOST	● Not in	● Contender	● Not in	● Not in	● Not in
Mphasis	● Product Challenger	● Leader	● Not in	● Contender	● Not in
NTT (UniKix)	● Not in	● Not in	● Not in	● Not in	● Contender
NTT DATA	● Not in	● Contender	● Not in	● Not in	● Not in
PSR	● Not in	● Not in	● Contender	● Contender	● Not in
Raincode	● Not in	● Not in	● Not in	● Not in	● Contender
Software AG	● Contender	● Not in	● Not in	● Not in	● Not in



## Mainframe Services & Solutions - Quadrant Provider Listing 4 of 4

	Mainframe Modernization Services	Mainframe Transformation Services	MFaaS – Mainframe-as-a-Service	Mainframe Operations	Mainframe Modernization Software
SysperTec (Virtel)	● Not in	● Not in	● Not in	● Not in	● Market Challenger
TCS	● Not in	● Leader	● Not in	● Leader	● Not in
Tech Mahindra	● Contender	● Leader	● Not in	● Not in	● Not in
TmaxSoft	● Not in	● Not in	● Not in	● Not in	● Leader
TSRI	● Not in	● Not in	● Not in	● Not in	● Leader
T-Systems	● Product Challenger	● Product Challenger	● Contender	● Contender	● Not in
Unisys	● Product Challenger	● Not in	● Not in	● Rising Star	● Not in
UST	● Leader	● Rising Star	● Not in	● Not in	● Not in
Vion	● Not in	● Not in	● Contender	● Not in	● Not in
Wipro	● Not in	● Market Challenger	● Not in	● Contender	● Not in



# Mainframe Services & Solutions Quadrants

## ENTERPRISE CONTEXT

### Mainframe Operations

This report is for U.S.-based enterprises, evaluating providers of mainframe operations related to mainframe applications.

In this quadrant report, ISG assess the current market positioning of providers offering mainframe operations. Our assessment is based on the depth and breadth of providers' service offerings and market presence.

The mainframe operations segment is mature and includes a full range of services related to mainframes, infrastructure and the cloud. Enterprises expect service providers to offer services, including consulting, managing, and monitoring mainframes; disaster recovery; database management; security and operating Linux. Enterprises look for services that address areas such as client and market challenges, cost savings, staffing risks, operation excellence and optimization.

Who should read the report:

- **Marketing and sales leaders** should read this report to understand how providers can help them develop and leverage a broad range of applications from multiple environments to achieve improved business planning and go-to-market strategy.
- **Operational leaders and finance leaders** should read this report to understand ways to differentiate, engage with and manage relationships with mainframe service providers that ensure optimal return on investment, including business performance improvements.
- **IT and technology leaders** should read this report to understand the strengths and weaknesses of providers offering mainframe operations, including their offerings, capabilities, market presence, strengths, relationships with other mainframe service providers, and the way they employ the latest technologies and capabilities to deliver reliable offerings, in keeping with enterprise business and market change.

## MAINFRAME OPERATIONS

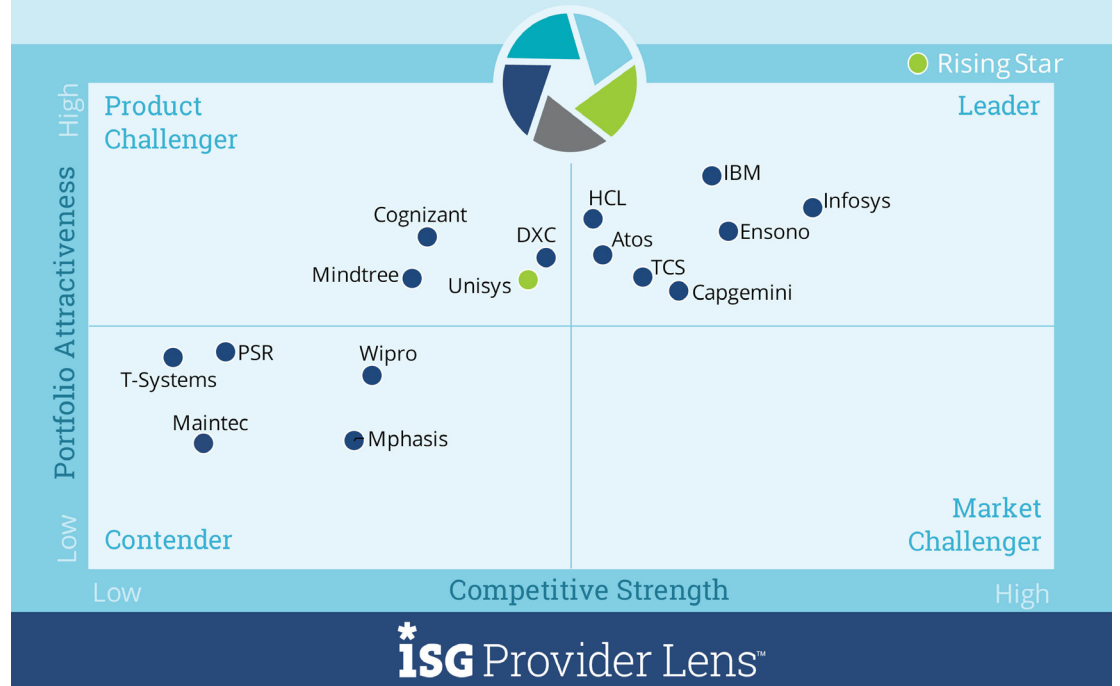
### Definition

This quadrant assesses traditional outsourcing providers that have long been offering mainframe services. Typical participants employ experienced practitioners to cover legacy mainframe technologies as well as the most recent mainframe releases.

Mainframe operation service providers offer skilled teams to keep clients' mainframes running. Services can be delivered on any hosting facility (client- or provider-owned). Mainframe operation services exist for a long time and include job scheduling, performance optimization, CICS, batch, backup, restore, system upgrades, security patches and other typical mainframe operations. Multiple options exist for hardware and software ownership, upgrades and modernization responsibilities.

Mainframe Services & Solutions  
Mainframe Operations

2021  
U.S.



Source: ISG Research 2021

## MAINFRAME OPERATIONS

### Eligibility Criteria

- Robust mainframe operation capacity must be demonstrated through case studies.
- The company must conduct hiring and training programs to ensure skills availability in the future.
- The company must offer professional services for the management and monitoring of CPU, memory, databases, operating systems and tools.
- Professional services must include patching services for operating systems, middleware and applications; system upgrades; data center security; network configuration; and system integration.
- The company must provide management dashboards, including utilization reports, performance indicators, chargeback and other reporting functionalities.
- Services must comply with ITSM best practices and include incident management, problem management and release management.
- Ideally, the service provider should have sufficient mainframe capacity to supplement its client capacity during peak times.

### Observations

Mainframe operations is a mature market with constant consolidation. It comprises traditional data center outsourcing providers that specialize in mainframes. The market is growing at around 5 percent each year in terms of MIPS capacity, but not in terms of the number of competitors.

Some service providers reported client churn, because of clients migrating small mainframes to the cloud. New clients come from in-house data centers. Clients choose mainframe operation services because of the availability of custom configurations and access to mainframe skills.

We qualified 16 service providers. These service providers manage more than 9 million MIPS globally and over 4.6 million MIPS in the U.S.

- **Atos** is a global service provider with more than 104,000 employees in 71 countries, generating €11 billion in revenue. Its portfolio includes cybersecurity, cloud and HPC. Atos has been providing mainframe operation services for more than 40 years and offers high-value mainframe services, including Linux on IBM Z, big data analytics, blockchain and ML. With more than 2,000 mainframe experts and large global mainframe operations, Atos can provide the U.S. clients with world-class managed mainframe operation services.
- **Capgemini** is a global service provider with more than 270,000 employees in 50 countries, generating €15.8 billion in revenue. It operates in 44 locations in the U.S. The company is a long-time IBM partner,

## MAINFRAME OPERATIONS

### Observations (cont.)

making mainframe services one of its core competencies. A seasoned operations team with large offshoring capacity and robust management tools position Capgemini in the Leader quadrant.

- **Ensono** offers a broad portfolio to more than 200 enterprise clients that are served by over 2,400 employees. It has 10 data centers in the U.S. and partners with AWS and Microsoft Azure. These high-scale data centers hold massive MIPS capacity. Ensono offers hybrid cloud managed services that integrate client's mainframe. Experienced staff and strict focus on expanding mainframe services are the base for Ensono's Leader position.
- **IBM** announced the spin-off of its GTS organization, creating a new company with approximated revenue of US\$19 billion, serving 4,600 clients, which makes it one of the top 10 global service providers in the IT service market. Mainframe operations has been part of GTS' portfolio for more than 40 years. IBM can support many outsourcing models, from staff augmentation to full outsourcing, and contractual terms that range from granular prices to monthly payments over consumption baselines.
- **Infosys** is a global service provider with more than 249,000 employees in 46 countries, generating US\$13.1 billion in revenue. North America accounts for more than 60 percent of the company's revenue. The company has an ambitious plan to be the most preferred mainframe services partner for enterprises within the next three years. Its mainframe operations rely on a robust service platform, leveraging AI automation. Infosys maintains a center of excellence to share the best practices globally, ensuring seamless services in all regions. It hosts a talent development program to attract and retain mainframe experts.
- **HCL Technologies** is a global service provider with more than 153,000 employees (called "ideapreneurs") working in 50 countries, generating US\$10 billion in revenue. It acquired Volvo Group IT services in 2018, providing it with additional expertise and a large mainframe footprint. The company owns six data centers in the U.S., including a Tier III data center in New Jersey. It hosts a mainframe lab in Sweden, a mainframe center of excellence in the U.S., and another one in India. HCL relies on automation to differentiate operation services, with a focus on MIPS reduction and efficiency gains.
- **Unisys** (Rising Star) is a global service provider headquartered in Pennsylvania with more than 17,000 employees, generating US\$2 billion in revenue. The company has been in the mainframe business since 1961. Unisys' MCP for Azure enables legacy ClearPath Forward mainframe applications to run in the cloud. The company offers mainframe operation services for systems running on-premises, in colocation or in the cloud. There are many legacy Unisys systems in the U.S. that need to be modernized and migrated to the cloud, providing Unisys with the opportunity to grow its footprint in this market.

## HCL

### Overview

HCL Technologies is a global service provider with more than 153,000 employees (called “ideapreneurs”) working in 50 countries, generating US\$10 billion in revenue. It acquired Volvo Group IT services in 2018, providing it with additional expertise and a large mainframe footprint. The company owns six data centers in the U.S., a mainframe lab in Sweden, a mainframe center of excellence in the U.S., and another center of excellence in India. HCL investments in recent years show its commitment to grow its mainframe services footprint in the U.S.

### Strengths

**Onboarding with optimization:** HCL’s modern modernization framework includes discovery tools that identify optimization opportunities. The company can optimize code and replace tools with its proprietary solutions to reduce software/ISV spend on the mainframe. HCL has built several tools and solutions for mainframe discovery and modernization services with its iLIT DC Suite. HCL can reduce a client’s MIPS requirements and consumption for lower total cost of ownership (TCO).

**Value-added services:** HCL provides application support and maintenance, development, consulting, performance optimization, migration, modernization, and product engineering. It offers new solutions on z/Linux and Red Hat OpenShift integrated with mainframe services through HCL-IBM Blue Diamond Partnership. Advanced governance processes complement its market differentiation.

**Full-stack IT services:** HCL has been expanding its portfolio to include leading-edge technologies such as AI/ML, as well as enhancing its toolset to support service management and operations. HCL Software Division complements the company’s mainframe solution with tools such as Z Asset Optimizer and HCL Workload Automation to rationalize software utilization. Clients benefit from HCL’s innovations while reducing costs.

**Robust offshore capacity and talent attractiveness:** HCL Enablement Program (T2ID) provides HCL with a continuous flow of new talents. The company has large offshore operations to supplement clients’ demand for new services and business continuity.

 **ISG** Provider Lens™

© 2021 Information Services Group, Inc. All Rights Reserved.

### Caution

HCL should gain scale in the U.S. to remain in the Leader position. Improvement opportunities could include COBOL DevOps automation, database optimization, virtual tape storage in the cloud and other innovations to promote HCL’s differentiation further.

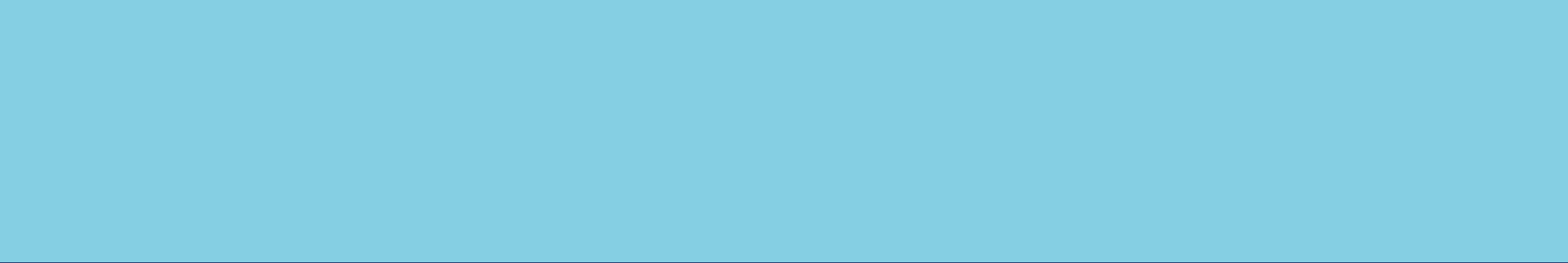


## 2021 ISG Provider Lens™ Leader

HCL builds on automation and analytics to provide clients with a superior customer experience. The company is in the right direction for growth.

imagine your future®

20



# Methodology



## METHODOLOGY

The research study “ISG Provider Lens™ 2021 – Mainframe Services & Solutions” analyzes the relevant software vendors/service providers in the U.S. market, based on a multi-phased research and analysis process. It positions these providers based on the ISG Research methodology.

The study was divided into the following steps:

1. Definition of Mainframe Services & Solutions market
2. Use of questionnaire-based surveys of service providers/vendor across all trend topics
3. Interactive discussions with service providers/vendors on capabilities & use cases
4. Leverage ISG's internal databases & advisor knowledge & experience (wherever applicable)
5. Detailed analysis & evaluation of services & service documentation based on the facts & figures received from providers & other sources.
6. Use of the following key evaluation criteria;
  - Strategy & vision;
  - Innovation;
  - Brand awareness and presence in the market;
  - Sales and partner landscape;
  - Breadth and depth of portfolio of services offered;
  - Technology advancements.



# Authors and Editors



## Pedro Luís Bicudo Maschio, Author

Partner Author

Distinguished analyst and author, Pedro brings extensive experience in research of the Americas and SEMEA (Southern Europe Middle East and Africa) markets. With more than 30 years of experience in sourcing, he has developed vendor assessments plus contract restructuring, services scope and IT benchmarking programs for diverse vertical markets in the Americas and Asia Pacific. Before joining ISG, Pedro was a partner of TGT Consult and managing vice president at Gartner Inc., responsible for the consulting business in APAC and Latin America.



## Srinivasan PN, Enterprise Context and Global Summary Analyst

Research Analyst

Srinivasan is a senior analyst at ISG and is responsible for supporting and co-authoring Provider Lens™ studies on AWS Ecosystem and Insurance BPO Industry. His area of expertise lies in the space of engineering services and digital transformation. Srinivasan has over 6 years of experience in the technology research industry and in his prior role, he carried out research delivery for both primary and secondary research capabilities. Srinivasan is responsible for developing content from an enterprise perspective and author the global summary report. Along with this, he supports the lead analysts in the research process and writes articles about recent market trends in the industry.

# Authors and Editors



## Jan Erik Aase, Editor

Partner, Principal Analyst and Global Head – ISG Provider Lens/ISG Research

Mr. Aase brings extensive experience in the implementation and research of service integration and management of both IT and business processes. With over 35 years of experience, he is highly skilled at analyzing vendor governance trends and methodologies, identifying inefficiencies in current processes, and advising the industry. Jan Erik has experience on all four sides of the sourcing and vendor governance lifecycle: as a client, an industry analyst, a service provider and an advisor. Now as a research director, principal analyst and global head of ISG Provider Lens™, he is very well positioned to assess and report on the state of the industry and make recommendations for both enterprises and service provider clients.

# ISG Provider Lens™ | Report: Mainframe Services & Solutions

## April 2021

© 2021 Information Services Group, Inc. All Rights Reserved



ISG (Information Services Group) (Nasdaq: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including more than 75 of world's top 100 enterprises, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; strategy and operations design; change management; market intelligence and technology research and analysis. Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 digital-ready professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit [www.isg-one.com](http://www.isg-one.com).